UNIVERSITY OF GONDAR FACULTY OF VETERINARY MEDICINE

DEPARTMENT OF ANIMAL PRODUCTION AND EXTENSION

SMALL SCALE DAIRY PRODUCTION AND MARKETING SYSTEM IN GONDAR TOWN

SENIOR RESEARCH PROJECT REPORT

BY

JEMAL HASSEN

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MAY, 2015

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ACRONYMS

AI Artificial insemination

AMUL Anand milk union ltd

CSA Central Statistical Agency

DDA Dairy development agency

DDE Dairy Development Enterprise

EARO Ethiopia Agricultural Research Organization

ILRI International Livestock Research Institute

MASL meters above sea level

MoA Ministry of Agriculture

PA Peasant association

O-CI-C Producer catering institution consumer

P-GI-C Producer government institution consumer

SDDP Small-holder Dairy Development Project

UNRRA United Nations relief and rehabilitation administration

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ABSTRACT

The study was conducted in Gondar town with the general objective of assessing small scale dairy production and marketing system in the study area. Six peasant associations (PA) were randomly selected and 30 respondents from five PA and 4 from one PA who are engaged in milk production were selected randomly. Hence a total of forty (36) smallholder dairy farmers were interviewed using semi structured questionnaire to collect data bout daily milk yield per cow and dairy marketing system and was analyzed by simple descriptive statistics. The average milk yield of cross breed dairy cows ranged between 10-14 liters per cow per day and the average milk yield of local breed dairy cows ranged between 4-6 liters per cow per day. The results from the study showed that the dairy enterprise was mainly a male domain (94.6%) whereas only 5.4% were women. The major constraints experienced by the respondents in the area were lack of land (75%), lack of feed (67.5 %) and prevalence of disease (65%) in the order of their importance. The study showed that income from the dairy enterprise was used to meet costs of various items including; buying food, paying for health services, education fees, and purchase of new assets, paying bills for water and electricity and building houses. It can be concluded from this study that small-scale dairy farming has a potential of improving the welfare of households though it was constrained by different factors. In order to promote and develop the smallholder dairy enterprise in Gondar districts and elsewhere there is a need for the farmers to form co-operative societies, which could assist them to acquire more capital needed in improving dairy production, and also seek markets for their milk. The Government should also improve the infrastructure for milk marketing so that small scale dairy farming could contribute towards poverty alleviation.

Key words: *Constraint, Dairy,Marketing,Small scale*

1. INTRODUCTION

Dairy sector is a major contributor to economic development especially among the developing countries. As an engine of growth, it provides increased income, employment, food and foreign exchange earnings as well as better nutrition as income increases with economic development the share of animal products in total food budget increases faster than that of cereals. These occur because of the relatively high income elasticity of demand for animal products .Like most dairy production systems found in the tropics.

Ethiopia is believed to have the largest livestock population in Africa. This livestock sector has been contributing considerable portion to the economy of the country, and still promising to rally round the economic development of the country. The total cattle population for the country is estimated to be about 53.99 million. Out of this the female cattle constitute about 55.48 percent and the remaining 44.52 percent are male cattle. 98.95 percent of the total cattle in the country are local breeds and remaining are hybrid and exotic breeds that accounted for about 0.94 percent and 0.11 percent, respectively (CSA, 2012/13). Despite the largest cattle population, productive and reproductive performance is very low. In 2012/13, the average lactation period per cow at country level was estimated to be about six months, and average milk yield per cow per day is about 1.32 liters/cow per day (CSA, 2012/13). The per capita milk consumption was only about 16 kg/year, which is much lower than African and world per capita averages of 27 kg/year and 100 kg/year, respectively (FAOSTAT, 2009). Although some improvement also reported in per capita consumption of milk and estimated it at 19.2 kg (MoA, 2012) but still production is lagging far behind the demand. The average lactation milk production of the indigenous cow ranges from 494–850 kg under optimum management (EARO, 1999; Haile *et al.*, 2009). This low per capita milk consumption is mainly emanated from poor genetic potential of local cattle for dairy traits.

The Ethiopian dairy production system includes large number from small to large sized and subsistence to market oriented farmers based climet,landholdings and integration with crop production criteria three production systems are recognized in Ethiopia among the existing production systems the traditional dairy production systems is the one involving from small holder dairy farmers. The traditional (small holder) milk production system which is dominated by indigenous breeds accounts for about 97-98% of the total annual milk production in the

country. Over 85% of the milk produced by rural households consumed with in the producer households with the proportion marketed being 7%.The small amount of milk produced by large number of producers but the low marketable output in Ethiopia posses limitations on the possibilities of exploiting distant but rewarding market due to high transaction costs arising from transportation and high opportunity cost of labor involved. As reported earlier the vast majority of milk produced outside urban centers in the country is produced in to milk products at householder level using traditional technologies. The potential role of small scale dairy farmers and organizations in meeting current and future consumer needs is recognized as vital to the development of dairying in Ethiopia in general and in the study area in particular. Nowadays, many investors are interested in participating in the development of the dairy industry throughout the country. Therefore, the availability of information on the development of milk production, productivity, constraints and marketing network is vital if proper and steady dairy development is expected in Ethiopia. This study will therefore serve as base line data for further research, future planning and management decision regarding small scale dairy production and marketing system in the study area. But the research will be limited to assessing dairy production and marketing system only due to time and budget constraints. Thus; this study was initiated with the general objective of assessing the milk production and marketing practice in the study area.

Specific Objectives

- To identify constraints of dairy production of the smallholder dairy farmers in Gondar district.
- To assess the dairy marketing systems and to identify constraints for dairy marketing in the area.

2. LITERATURE REVIEW

2.1. Historical dairy development in Ethiopia

According to Ahmed *et al.,* (2003), in the first half of the 20th century, dairying in Ethiopia was mostly traditional. Modern dairying started in the early 1950s when Ethiopia received the first batch of dairy cattle from United Nations Relief and Rehabilitation Administration (UNRRA). With the introduction of these cattle in the country, commercial liquid milk production started on large farms in Addis Ababa and Asmara (Reteam, 2000).Government intervened through the introduction of high-yielding dairy cattle in the highlands in and around major urban areas. The government also established modern milk processing and marketing facilities to complement this input-oriented production effort.

2.2. Dairy production systems in Ethiopia

As defined by Sere and Steinfield (1995), livestock production systems are considered a subset of the farming systems, including cases in which livestock contribute more than 10% to total farm output in value terms or where intermediate contributions such as animal traction or manure represent more than 10% of the total value of purchased inputs. There are different classification criteria for livestock production systems in general and dairy production systems in particular. For example, based on criteria such as integration with crops, relation to land, agro-ecological zones, intensity of production and type of product, the world livestock production systems are classified into 11 systems (Sere and Steinfield 1995). Of these livestock production systems, mixed farm rain fed temperate and tropical highlands (MRT system) is by far the largest. Globally, it represents 41% of the arable land, 21% of the cattle population, and 37% of dairy cattle (Sere and Steinfield 1995).

Dairying is practiced almost all over Ethiopia involving a vast number of small or medium or large-sized, subsistence or market-oriented farms. Based on climate, land holdings and

integration with crop production as criterion, dairy production systems are recognized in Ethiopia; namely the rural dairy system which is part of the subsistence farming system and includes pastoralists, agro-pastoralists, and mixed crop-livestock producers; the peri-urban; and urban dairy systems (Adage and Alamo 1998; Ketema 2000; Tsehay2001; Yoseph *et al.* 2003; Zegeye 2003; Dereje *et al.*, 2005). The first system (pastoralism, agropastoralism and highland mixed smallholder production system) contributes to 98%, while the peri-urban and urban dairy farms produce only 2% of the total milk production Of the country (Ketema 2000).The rural system is non-market oriented and most of the milk produced in this system is retained for home consumption. The level of milk surplus is determined by the demand for milk by the household and its neighbours, the potential to produce milk in terms of herd size and production season, and access to a nearby market. The surplus is mainly processed using traditional technologies and the processed milk products such as Butter, ghee, ayib and sour milk are usually marketed through the informal market after the households satisfy their needs (Tsehay 2001). Pastoralists raise about 30% of the indigenous livestock population which serve as the major milk production system for an estimated 10% of the country's human population living in the lowland areas. Milk Production in this system is characterized by low yield and seasonal availability (Zegeye 2003).The highland smallholder milk production is found in the central part of Ethiopia where dairying is nearly always part of the subsistence, smallholder mixed crop and livestock farming. Local animals raised in this system generally have low performance with average age at first calving of 53 months, average calving intervals of 25 months and average lactation yield of 524 liters (Zegeye 2003).

Peri-urban milk production is developed in areas where the population density is high and agricultural land is shrinking due to urbanization around big cities like Addis Ababa. It possesses animal types ranging from 50% crosses to high grade Friesian in small to medium-sized farms. The peri-urban milk system includes smallholder and commercial dairy farmers in the proximity of Addis Ababa and other regional towns. This sector owns most of the country's improved dairy stock (Tsehay 2001). The main source of feed is both home produced or purchased hay; and the primary objective is to get additional cash income from milk sale. This production system is now expanding in the highlands among mixed crop-livestock farmers, such as those found in Selale and Holetta, and serves as the major milk supplier to the urban market (Gebre Wold *et al.* 2000).

Urban dairy farming is a system involving highly specialized, state or businessmen owned farms, which are mainly concentrated in major cities of the country. They have no access to grazing land. Currently, a number of smallholder and commercial dairy farms are emerging mainly in the urban and peri-urban areas of the capital (Fell eke and Geda 2001; Azage 2003) and most regional towns and districts (Ike 2002; Nigussie 2006). Smallholder rural dairy farms are also increasing in number in areas where there is market access. According to Azage and Alemu (1 998), the urban milk system in Addis Ababa consists of 5167 small, medium and large dairy farms producing 34.65 million liters of milk annually. Of the total urban milk production, 73% is sold, 10% is left for household consumption, 9.4% goes to calves and 7.6% is processed into butter and ayib (cheese). In terms of marketing, 71% of the producers sell milk directly to consumers (Tsehay 2001).

2.3. Dairy marketing systems in Ethiopia

In the African context, markets for agricultural products would normally refer to market places (open spaces where commodities are traded). Conceptually, however, a market can be visualized as a process in which ownership of goods is transferred from sellers to buyers who may be final consumers or intermediaries. Therefore, markets involve sales, locations, sellers, buyers and transactions (Debrah and Berhanu 1991).

2.3.1. Formal and Informal dairy marketing

The term 'informal' is often used to describe marketing systems in which governments do not intervene substantially in marketing. Such marketing systems are also referred to as parallel markets. The term 'formal' is thus used to describe government (official) marketing systems (Debrah, 1990). Dependable system has not been developed to market milk and milk products in Ethiopia (Zegeye 2003). Fresh milk is distributed through the informal and formal marketing systems. In both rural and urban parts of the country, milk is distributed from producers through the informal (traditional) means. This informal market involves direct delivery of fresh milk by

producers to consumers in the immediate neighborhood or to any interested individuals in nearby towns (Debrah and Berhanu 1991).

Initial intervention to promote formal dairy marketing started with the establishment of a 300 dairy farm and a small milk processing plant under the UN Relief and Rehabilitation Program in 1947 in the premises of the now Dairy Development Enterprise (DDE) (Sintayehu 2003). The same report stated that in 1959 UNICEF helped establish a Processing plant with a processing capacity of 10 thousand liters per day with milk collection and purchasing centers on Addis Ababa. The radius of milk collection was later expanded to 70 km around the capital. Capacity of the processing plant was increased to 30 thousand liters in 1969. In 1979 the DDA (Dairy Development Agency) was transformed to the DDE when processing capacity was increased to 60 thousand liters/day and the radius of collection expanded to 150 km with donor assistance. The only organized and formal milk marketing and distribution system comes from the two milk-processing plants which are both located in the capital Addis Ababa
(Zegeye, 2003).' As reported by many authors, farmers' milk marketing groups and dairy cooperatives play a key role for milk marketing outlets, which as a result encourages farmers to produce more (Zegeye, 2003).

2.3.2. Role of farmers' milk marketing groups

According to Tsehay (1998), a milk-marketing group can be defined as a group of smallholder farmers who individually produce at least one liter of saleable milk and are willing to form a group with the objective of collectively processing and marketing milk. To facilitate milk marketing by smallholders with crossbred cows, SDDP catalyzed the formation of producer 'milk groups' (also called 'milk units' or 'mini-dairies') to process milk into butter, local cottage-type cheese (ayib), and yoghurt-like sour milk (ergo), primarily in the northern Shewa zone, north of Addis Ababa. Two similar producer groups were formed south of Assela (Arsi zone) with assistance from the Ministry of Agriculture, and another group was formed in Bakelo near Debra Birhan. This last site is in the Amhara region, whereas the other four are in the Oromia region (Nicholson *et al.*, 1998).

2.3.3. Role of dairy cooperatives in facilitating marketing

Berhane and Workneh (2003), in their review, indicated the very useful involvement of the government of India at every step of the development for expansion of dairy cooperatives in the country for the successes of dairying and suggested that the Anand pattern of dairy development (India) can be emulated at least around the major milk sheds. As demonstrated in India, dairy marketing cooperatives could provide farmers with continuous milk outlets, and easy access to essential inputs such as artificial insemination (Al), veterinary services and formulated feeds. Dairy cooperatives are supposed to help to trigger a series of positive developments in the subsector; hence strengthening the existing group marketing activities and formation of new cooperatives in different parts of the country (Berhane and Workneh 2003).

Although they are not studied and presented in literatures, nowadays, some dairy processing plants are established in different parts of the country (for example in Bahir Dar, Debra Zeit and Dire Dawa areas). The history of the dairy cooperative system in India began in 1946 with the establishment of the Anand Milk Union Ltd (AMUL). In 1970, Operation Flood commenced with the objective of establishing a cooperative structure on the Anand pattern (Matthewman 1 993). In 1980, some 12 thousand village cooperative milk producers' societies had been established in 27 selected milk shed districts. This was expanded by 1984 to 28,174 village producers in 155 milk shed districts linked to markets in 147 towns. The case of Uganda (followed the same milk collection schemes through cooperatives with this regard) is also a good example from east Africa (Matthewman 1993). Cooperative selling institutions are potential catalysts for mitigating costs, stimulate smallholders' entry into the market, and promote growth in rural communities (Holloway *et al.*, 2000). Case studies from Kenya and Ethiopia illustrate the role of dairy cooperatives in reducing transaction costs (Staal *et al.*, 1997). A good example to be mentioned in Ethiopia is Ada'a4_iben Woreda Dairy Association (Azage, 2003) which presently renders milk to processing plants in Addis Ababa.

2.3.4. Dairy marketing channels and outlets

Marketing channel describes the movement of a product or commodity from the site of production to the place of consumption (Getahun, 2008) Terms related to marketing outlets, marketing channels, and marketing chains are important to describe dairy marketing systems.

Marketing outlet is the final market place to deliver the dairy product, where it may pass through different channels. A network (combination) of market channels gives rise to the market chain. A study of the milk marketing system in Ethiopia has shown that there are at least eight different marketing channels, with the number of intermediaries ranging from 1 to 4 (FAO 1 996). A study in Addis Ababa milk shed revealed that dairy producers sold milk through different principal market channels (Debrah 1990; Mbogoh 1990), which included:

• Producer-consumer (P-C) channel: direct sales to individual consumers, which accounted for 71% of the total channels (Mbogoh 1990);

• Producer-catering institution-consumer (P-CI-C) channel: catering institutions includes// itinerant traders, small private shops and kiosks, coffee and tea sales, hotels, and supermarkets; and

• Producer-government institution-consumer (P-GI-C) channel: sales to government institutions such as the armed forces, schools and hospitals.

2.4 Feeding management of dairy cows

Proper feeding of dairy cattle should envisage minimum wastage of nutrients and maximum returns in respect of milk produced. Feeding a concentrated mixture made up of protein supplements such as oil cakes, energy sources as cereal grains (maize, jowar) and laxative feeds such as brans (rice bran, wheat bran, gram husk) should be remembered to achieve maximum production (TNAU, 2009). Palatable feed is important in achieving high nutrient intake. So are the clean lines of feed manager. Cows that are milking in heaviest are the ones most likely to be adversely affected by unclean feeding areas. They have the need for greatest feed intake and are usually more easily thrown of feed than lower producers (William and Paul, 1978).

2.5 Common challenges and constraints of dairy Production and marketing in Ethiopia

Challenges and problems for dairying vary from one production system to another and/or from one location to another. The structure and performance of livestock and its products marketing both for domestic consumption and for export is generally perceived poor in Ethiopia. Underdevelopment and lack of market-oriented production, lack of adequate information on

livestock resources, inadequate permanent trade routes and other facilities like feeds, water, holding grounds, lack or non-provision of transport, ineffectiveness and inadequate infrastructural and institutional set-ups, prevalence of diseases, illegal trade and inadequate market information (internal and external) are generally mentioned as some of the major reasons for the poor performance of this sector (Belachew 1998; Belachew and Jemberu 2003; Yacob as cited in Ayele *et al.*, 2003). In the debate of poverty reduction or small-scale vs. industrial production and in spite of a general consensus on the appropriateness of general recommendations, there seem to be a lack of vision regarding the future structure and roles of the present small-scale producers. Many donors seem ready to protect and preserve the smallholders, but few have a vision of the process requiring 'transforming small-scale subsistence producers into commercial producers supplying a modern, demanding food market' (Kristensen *et al.*, 2004). According to the same report, small-scale farmers can be empowered through:

Promoting farmer organization, provision of training.

Developing infrastructure, roads, markets.

Providing incentives and promoting vertical integration with supply and processing and marketing sectors

Improving access to information and to agricultural and veterinary services

Promoting participatory methods in research and technology development

Supporting pro-poor research and advisory services that are smallholder oriented.

In order to have such recommendations, therefore, knowledge of the specific characteristics of dairy production and marketing systems is vital to be able to target recommendations to specific production systems')

3. MATERIALS AND METHODS

3.1. Description of the Study Area

The study was conduct in Gondar district, Amhara National Regional State, located in the North-Western part of Ethiopia. Study area is found at 778 kms North-West of the capital, Addis

Ababa. It is located between 12.3º to 13.38º North latitudes and 35.5º to 38.3º East longitudes and the altitude ranges from 550 to 4620 meters above sea level (masl) in Western lowland and in North Semen Mountain, respectively. The average annual rain fall vary from 880 mm to 1772 mm, which is characterized by a bimodal type of distribution. The mean annual minimum and maximum temperature is 10ºC in the highland and 44.5ºC in the lowland (NMA, 2011).The total livestock population of Gondar district is 33235.From this the local breeds are 30226 and exotic breeds are 3009 Source, 2006 EC Gondar town Agricultural department(Livestock)

3.2. Sampling technique

Six peasant associations (PA) and six respondents from five PA and four respondents from one PA were proposed to be randomly selected. Thus a total of 34 respondents were randomly selected.

3.3. Data collection and Analysis

Data on dairy production, marketing and constraints of milk production and marketing in the study area was collected by interviewing with semi-structured questionnaire. The data collected was analyzed by simple descriptive statistics (mean, percentage) and summarized by tables.

4. RESULTS AND DISCUSSION

4.1. Socio-economic household characteristics

The study indicated that most (40%) of the respondents were above the age of 40 years and 82.5% of the respondents were male where as only 17.5% were female (Table 1). More than (60%) of the respondents had attained primary education including some with secondary education. Results of the study show that the dairy enterprise did constitute the major source of income.

Table 1: Socio –economic characteristics of the small scale dairy farmers

Parameters		**Frequency**	**Percentage**
	Total farmers surveyed	40	100%
Age of respondent	20-30	4	10
	31-40	15	37.5
	41-50	16	40
	51-60	5	12.5
Farmers gender	Male	33	82.5
	Female	7	17.5
Respondents education	Primary school	24	60
	Secondary	11	27.5
	University	2	5
	Vocational	2	5
	Other(certificates)	1	2.5
Respondents occupation	Dairy farmer	28	70
	Government employment	6	15
	Trader	3	7.5
	Other livestock	3	7.5

4.2 Dairy Production systems

The study assessed dairy production system depending on their responses milk produced by the (PA) use the following production systems based on their input levels.

Rural smallholder dairying: Dairying is often part of a mixed farming system in which manure is used for cash crop production. Dairy animals are fed on grass, crop residues and cultivated fodder. Supplementary feeding is practiced only when feasible.

Landless peri-urban dairying: This is a purely market-oriented production system located within and close to the boundaries of cities. Peri-urban dairy producer's benefit from their closeness to markets, but their production is based on purchased inputs and may encounter problems of feed supply and waste disposal.

In contrary to researchers as reported by (Adage and Alamo 1998; Ketema 2000; Tsehay2001; Yoseph *et al.,* 2003; Zegeye 2003; Dereje *et al.,* 2005). There was no agro-pastoralist production system. While, there is rural small holder dairying (41%) and landless per-urban dairying (59%) production system in study area.

Table 2: Dairy production system in study area

Production system	**Frequency**	**Percentage (%)**
Rural small holder dairying	14	41
Landlessperi-urban dairying	20	59

4.3. Constraints of dairy production and marketing

The result showed that in study area the major problems and constraints according to their degree of importance as land shortage (75%), lack of fodder (67.5), prevalence of disease (65%), low milk yield (62.5%), less government attention (57.5%) , problems related to (marketing),

discouraging seasonal marketing systems (55%), (Table 2).but according to researchers (Belachew 1998;Belachew and Jemberu 2003; Yacob as cited in Ayele *et al.*, 2003.Reported beyond the above listed problems like lack of market, lack of livestock resource, etc

Table 3: Major problems encountered in dairy enterprise

Rank	Parameter	Frequency	Percentage
1st	Lack of land	30	75
2nd	Lack of feed	27	67.5
3rd	Prevalence of disease	26	65
4th	Low milk yield	25	62.5
5th	Low government attention	23	57.5
6th	Discouraging seasonal marketing systems	22	55

4.4. Milk production performance

The lactating cattle population in study area was around 220 in number the indigenous cows were 49 and cross breed 171. Their milk output per day different is because of different in breed (table 4)

Table 4. Breeds of dairy cattle population and average milk production

Breed type	Number	Average Milk yield (liter/day)	Range of milk yield
Indigenous	49	4.75	4-6
Cross breed	171	9	8-12
Total	220		

4.5. Herd Structure

Table 5: Herd structure /composition of dairy cattle's in study area

Type of animal	Indigenous breed		Cross breed	
	Number	Average cattle population/HH	Number	average(cattle population)
Lactating (milking cow)	49	1.2	171	4.3
Dry cow (pregnant)	19	0.48	69	1.7
Heifers	16	0.4	32	0.8
Female calves	19	0.48	38	0.95
Male calves	21	0.56	46	1.15
Male fattening cattle	14	0.35	17	0.4
Bull	11	0.26	19	0.48
Total	149		392	

4.5. Feeding management

The study assessed that there are two systems of feeding, which are practiced by the dairy owners to feed their cattle. 52.5% farmers followed stall feeding and 47.5% farmers followed both stall and grazing system (Table). All calves were fed milk by suckling. The main livestock feed at the study area was crop residue, wheat bran, frushka (local name), dashine by products, bean bran, natural grass. Most of the dairy owners in study area use, (stall feeding) or cut and carry management system and the rest of dairy owners are stall+grazing feeding system.Therfore, The PAs becoming stall+grazing to stall feeding system. As reported by (William and paul, 1978). Cows that are milking in heaviest are the ones most likely to be adversely affected by unclean feeding areas. They have the need for greatest feed intake.

Table 6: Feeding management of dairy cows in study area

No	Types of feeding system	Frequency	Percentage (%)
1	Stall(cut and carry system)	14	41
2	Stall + grazing	20	59
3	Others	-	0
Total		34	100

4.6. Dairy marketing system

According to our study result the dairy marketing system almost all of the dairy owners are used informal marketing system without involving government intervention.

Dairy marketing system includes formal and informal marketing system. The term informal is used to describe marketing in which government do not involve in marketing process. The term formal used to describe involvement of government in dairy marketing system (According to Debrah, 1990).

Table 7: Type of dairy marketing system in study area

Dairy marketing system	Frequency	Percentage (%)
Formal	0	0
Informal	34	100

4.7. Income Generation

Milk production ranged between 0-90 liters per day with most respondents (Modal class) Producing between 13-15 liters per day. The average milk production per day per respondent was 14 liters per day/household. However the average milk production per cow per day was lower than those reported in literature for other small-scale dairy farmers elsewhere in Ethiopia (Sarwatt and Njau, 1990; Biwi, 1993; Aboud *et al*., 1995, Mulangila, 1997 and Urassa, 1999).The low production may have been due to a number of factors including lack of proper Supplementary feeding of the dairy cattle, poor nutritive value of pastures and forages offered to the animals and lack of dairy husbandry training as none of the respondents had received any

formal training in dairy husbandry. Income from milk sales ranged between 180 to 195 birr per day (Table5).

Table 8 Milk production and income generation in study area.

Kebele	**Milk production /day/cow**	**Frequency**	**Average milk**	**price/liter/birr**
Kebele 3	6-11	7	7	11-12
Kebele 10	11-13	5	11.5	10-12
Kebele 15	13-15	7	13.6	10-12
Kebele 18	10-12	7	10.5	10-11
Kebele 19	7-9	7	7.6	9-12
Kebele 20	6-8	7	6.75	10-13

4.8. Marketing channel in the study area

This result showed that the peasant associations (PA) use the marketing channels 62.5% of the farmers were sold to individual consumers where as the remaining 37.5% of the farmers was sold for restaurants or cafeteria. Similarly a study in Addis Ababa milk shed revealed that dairy producers sold milk through different principal market channels (Debrah 1990; Mbogoh 1990) which included Producer-consumer (P-C) channel (71%) of the total channels (Mbogoh 1990).Market chain problems found in study area are sometimes unavailability of custumer , seasonal discouraging of cost.

Table 9: marketing channels in studied area

Marketing channels	Frequency	Percentage
Producer to individual customers	25	62.5
producer to restaurants	15	37.5

5. CONCLUSION AND RECOMMENDATIONS

From this study it can be concluded that small-scale dairy farming in Gondar district contributes a great role to the household welfare in terms of food security, shelter, income generation and other social services. It may also be concluded that small-scale dairy production in Gondar is mainly carried out as an income supplementing activity of income. The dairy enterprise is mostly headed by male. The dairy production in the study area was constrained by

In order to promote and develop the smallholder dairy enterprise, the following recommendations need some due consideration by all the stake holders in the dairy sectors at all levels i.e. district/regional and national authorities which includes

- The level of market quality has an impact on dairy intensification with regard to feed, breed and milk production. As the level of market quality improved, the trends towards better feed production and utilization, use of improved dairy cattle and milk production has also improved.
- Improvement or modernization of the existing government veterinary clinics/extension services.
- The small-scale dairy farmers should struggle to establish co-operative unions through which they could establish milk collecting centers and also provide the inputs such as supplementary feeds, extension services at affordable costs to its members.
- Provisions of capital (loans/Credits) support to small-scale dairy farmers. The capital should be directed towards modernization of production and marketing such as establishing the private processing plants and cold rooms in the milk collection centers.
- Provision of training in dairy husbandry to the small-scale dairy farmers.
- Provision of the good quality heifers to small-scale dairy to improve production

6. REFERENCE

Ahmed MAM, Ehuis and Yemesrach Assefa. 2003. Dairy development in Ethiopia. Paper presented at the 'Successes in African agriculture' conference In: WEnt, IFPRI, NEPAD, CTA conference paper no. 6. 1-3 December 2003, Pretoria, South Africa.

AOSTAT, 2009. FAO statistical yearbook. Rome, Food Agr. Organ. Unit. Nat.

Ayele Solomon, Assegid Workalemahu, Jabbar MA, Ahmed MM and Belachew Hurissa. 200. Livestock marketing in Ethiopia: A review of structure, performance and development initiatives.Socio-economic and Policy Research Working Paper 52. ILRI (International Livestock Research Institute), Nairobi, Kenya. 35 Pp.

AzageTegegne and Alemu C/wold. 1998. Prospects for peri-urban dairy development in Ethiopia. In: Fifth national conference of ESAP (Ethiopian Society of Animal Production). ESAP, Addis Ababa, Ethiopia.

Belachew Hurissa and Jemberu Eshetu, 2003. Challenges and opportunities of livestock marketing in Ethiopia. In: Jobre Y and Gebru G (eds), Challenges and opportunities of livestock marketing in Ethiopia. Proceedings of the 1 0th annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, 2 1-23 August 2002. ESAP, Addis Ababa, Ethiopia, Pp. 1-13

Berhane Mekete and Workneh Ayalew, 2003. Promotion of dairy marketing using farmer'scooperatives: Lessons from India. In: Jobre Y and Gebru G (eds), Challenges and opportunities of livestock marketing in Ethiopia. Proceedings of the Wth annual conference of ESAP (Ethiopian Society of Animal Production) held in Addis Ababa, Ethiopia, 22-24 August 2002. ESAP, Addis Ababa, Ethiopia, pp. 81-87.

CSA. 2012/13. Agricultural sample survey. Report on livestock and livestock characteristics. The Federal Democratic republic of Ethiopia, Central Statistical Agency (CSA). Private Peasant Holdings. Statistical Bulletin 570, Addis Ababa, Ethiopia, April, 2013.

Debrah and Berhanu Anteneh. 1991. Dairy marketing in Ethiopia: Markets of first sale and producers' marketing patterns.ILCA Research Report 19. ILCA (International Livestock Centrefor Africa), Addis Ababa, Ethiopia. 21 Pp.

Dereje Tadesse, Workneh Ayalew and Hegde BP. 2005. Survey of traditional cattle production systems and preferred cattle functions in North and south Wollo zones, Ethiopia. Ethiopian Veterinary journal 9(1):91 -1 08.

EARO (Ethiopian Agriculture Research Organization), 1999. Livestock Research Strategy, Executive Summary.EARO, Addis Ababa, Ethiopia.

FAO (Food and Agricultural Organization of the United Nations). 1 996. Milk processing guide series. Training programme for small scale dairy sector and dairy training institute. Volume 6.FAO/TCP/KEN/6611 Project. FAO, Rome, Italy.

Fell eke Getachew and Geda Gashaw. 2001. The Ethiopian dairy development policy: A draft policy document. Ministry of Agriculture/AFRDRD/AFRDT Food and Agriculture Organization of the United Nations/SSFF. Addis Ababa, Ethiopia

Gebre Wold A, Alemayehu M, Demeke S, Bediye S and Tadesse A. 2000. Status of dairy development. Smallholder Dairy Development Project (SDDP) dairy research in Ethiopia. In: The role of village dairy co-operatives in dairy development. SDDP (Smallholder Dairy Development Project) Proceedings, MOA (Ministry of Agriculture), Addis Ababa, Ethiopia.

Getahun L. 2008. Productive and Economic performance of Small Ruminant production.

Haile, A., Joshi, B.K., Workneh, A., Azage, T., Singh, A. 2009. Genetic evaluation of Boran cattle and theircrosses with Holstein Friesian in central Ethiopia, milk production traits. Anim., 3(4), 486-493.

Holtzeman JS. 1986. Rapid reconnaissance guidelines for agricultural marketing and system research in developing countries. MSU International Development Papers, Working Paper No.30. MSU (Michigan State University), East Lansing, Michigan, USA.

Holloway G, Nicholson C, Delgado C, Staal S and Ehui S. 2000. Agro-industrialization through institutional innovation: Transaction costs, cooperatives and milk-market development in the east African highlands. Agricultural Economics 23: 279-288.

Ike A. 2002. Urban dairying in Awassa, Ethiopia. MSc thesis, University of Hohenheim, Stuttgart-Hohenheim, Germany.113Pp.

IPMS (Improving Productivity and Market Success). 2005. Dale thematic maps. IPMS, Addis Aabba, Ethiopia.Ketema Hizkias. 2000. Dairy development in Ethiopia. In: The role of village dairy co-operatives in dairy development. SDDP (Smallholder Dairy Development Project) Proceedings, MOA (Ministry of Agriculture), Addis Ababa, Ethiopia.

Kristensen E, Schou Larsen CE, Kyvsgaard NC, Madsen J and Henriksen J. 2004. Livestock production— the twenty first century's food revolution. (Discussion paper on the donor community's role in securing a poverty oriented commercialization of livestock production in the developing world).

Matthewman RW. 1993. Dairying. The tropical agriculturist. CTA publication, Waginingen, the Netherlands, Pp. 23-31.

Menegay MR and Molina C. 1 988. Guidelines for Rapid Marketing Appraisals (RMA) in the Philippines. Asian Research and Training Centre for Agricultural Marketing, Columbia, Maryland, USA.

Moa, 2012. Livestock growth strategy and action. Draft discussion paper. Addis Ababa, MoA. (Amharic version).

National Meteorological agency (NMA), 2011. Annual Climatically Bulletin for the year 2011. National Metrological Agency of Ethiopia. .

Nigussie Gebreselassie. 2006. Characterization and evaluation of urban dairy production system inMekelle city, Tigray region, Ethiopia. MSc thesis, Hawassa University, Awassa, Ethiopia. 54 Pp.

Nicholson C. F, Getachew Gebru, Ehui SK, Shapiro Bl and Delgado C. 1998. Producer milk groups in Ethiopia: Impacts on women's role in dairy production and marketing. In: Women and animal production. Proceedings of 6th annual conference of ESAP

(Ethiopian Society of Animal Production) held in Addis Ababa, Ethiopia, 14-15 May 1998. ESAP, Addis Ababa, Ethiopia, Pp.30-39.

Sere, C, and Steinfield, H, 1995. World livestock production systems—Current status, issues andtrends. In: Gardiner P and Devendra C (eds), Global agenda for livestock research: Proceedings of a consultation, ILRI, Nairobi, Kenya, 18-20 January 1995. ILRI (International Livestock Research Institute), Nairobi, Kenya, Pp. 11-38.

Sintayehu Gebre Mariam, 2003. Historical development of systematic marketing of livestock and livestock products in Ethiopia. In: Jobre Y and Cebru G (eds), Challenges and opportunities of livestock marketing in Ethiopia. Proceedings of the 10th annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, 22-24 August 2002. ESAP, Addis Ababa, Ethiopia, Pp. 15-21.

Staal, SJ and Shapiro, Bl, 1996, The economic impact of public policy on smallholder peri-urbandairy production in and around Addis Ababa. ESAP Publication No. 2. ESAP (Ethiopian Society of Animal Production), Addis Ababa, Ethiopia. 64 Pp.

TNAU, 2009. Animal housbander. Tamilnadu Agricultural University, Tamilnadu, India.

Tsehay Redda. 1998. Milk processing and marketing options for rural small-scale producers. In:ESAP (Ethiopian Society of Animal Production), Fifth national conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, 1 5-1 7 May 1 997. Pp.6171.

Tsehay Redda, 2001. Small-scale milk marketing and processing in Ethiopia. In: Rangnekar D and Thorpe W (eds), Smallholder dairy production and marketing— Opportunities and constraints. Proceedings of a South-South workshop held at NDDB, Anand, India, and 13-16 March 2001.

William M. Etgen & Paul M. Reoves, 1978. Dairy cattle feeding and managment. 6 Ed. Virginie polytechinic institute and state University, Blacksburg, virgine, Pp-548.

Yoseph Mekasha, AzageTegegne and Alemu Yami, 2003. Evaluation of the general farm characteristics and dairy herd structure in urban and peri-urban dairy production system

in Addis Ababa milk shed. In: Jobre Y and Gebru G (eds), Challenges and opportunities of livestock marketing in Ethiopia. Proceedings of the Wth annual conference of the Ethiopian Society of Animal Production (ESAP), held in Addis Ababa, Ethiopia, 22-24 August 2002. ESAP, Addis Ababa, Ethiopia, Pp. 139-144.

Yoseph Mekasha, AzageTegegne, Alemu Yami and Umunna N, 2000. Feed resources and nutritional management of dairy herds in urban and peri-urban dairy production systems in Ethiopia. In: ESAP (Ethiopian Society of Animal Production), the complementarily of feed resource for animal production in Africa. Proceedings of the joint feed resources networks workshop held in Gaborone, Botswana, 4-8 March 1991. ESAP, Addis Ababa, Ethiopia, Pp.77-88.

Zegeye Yigezu. 2003. Imperative and challenges of dairy production, processing and marketing in Ethiopia. In: Jobre Y and Gebru G (eds), Challenges and opportunities of livestock marketing in Ethiopia. Proceedings of the 10th annual conference of the Ethiopian Society of AnimalProduction (August 2002. ESAP, Addis Ababa, Ethiopia, Pp. 61-67.ESAP) held in Addis Ababa, Ethiopia, 22-24

7. ANNEXES -I

QUESTIONNAIRE FOR SMALL SCALE DAIRY PRODUCTION AND MARKETING SYSTEM IN AND AROUND GONDAR TOWN

INTRODUCTION

Good (morning, afternoon).we are conducting a study concerning dairy production and marketing issues in your neighborhood on behalf of Gondar university. The aim of this study is to understand dairy production systems, marketing and identify problems you encounter in your enterprise. This study wills be conducted in all milk-shed areas throughout the country. While the general conclusions of the study may be used to help formulate government policy recommendations for improving dairy production in the country, all the specific information about you, your family and undertakings will be treated confidentially. We hope that you will be willing to help us in this study.

1: Basic Household Information

1) Respondent's Name: ……...……

2) Gender of the respondent: _ Male (1) _ Female (2) 3) Age of the respondent….years old

4) Farm address: Village.....

5) Respondent's position in the household (with respect to the head):_ Husband (1) _ Wife (2) _ Daughter (3)_ Son (4) _ Relative living in a house (5)_ Farm laborer (6) _ Other (7), please specify.……

6) Respondent's educational background:_ Primary school (1) _ Secondary school (2) _ Vocational school (3) _ College / University (4) _ Other (5), please specify……

7) Number of years spent in school…….years

8) Livelihood sources 8a. Income sources of the family 8b. Rank (max. 5) of your sources of household income in ascending order as follows: (1 =most important to 5 =least important**)** 1. Dairy farming 2. Other livestock / Beef fattening/ rearing livestock 3. Crop (Agriculture) (maize,

barley, tobacco) 4. Fisheries 5. Government employment 6. Private sector employment 7. Daily labor 8. Trade / Shopkeeper 9. Social support 10. Forest products

2: Dairy Farming

9) When did you start dairy farming? .....years (Enumerator to calculate the number of years)

10) Did you have prior knowledge of dairy farming? _ Yes (1) _ No (2) If yes, from where? .....

11) How did you start dairy farming? _ Encouraged by parents/relatives/friends (1) _ Introduced by Govt./NGO/Donors (2), please specify..... _ Self-motivated (3) _ Inherited (4) _ other (5), please specify)……..

12) Do any members of your family / friends practice dairy farming? (Choose as many as apply) _ Parents (of husband / wife) (1) _ Brother / sisters (of husband / wife) (2) _ Friends (of husband / wife) (3) _ other (4), please specify……. _ none of the above (5)

13) Why did you start dairy farming? (Choose up to 2 options)_ To increase income (1) _ To increase food security (2) _ To diversify sources of income (3) _ Other (4), please specify……..

2-B. Dairy farm structure, facilities and management

14.a type of animals	14b.local breed	14c.crossbreed	14d.pure breeds
	Number of animals	Number of animals	Number of animals
1.Lactating (milking) cows			
2.dry cows (pregnant)			
34Heifers (more than 1 year old			
4.Female calves (less than 1 year old)			
5.Male calves (less than 1 year old)			
6. Male fattening cattle			

7. Bull			

2-c. Milk production

15) How many times a day do you milk your cows? _ once (1) _ 2 times (2) _ 3 times (3)

16) Do you clean hands before milking? _ Yes (1) _ No (0)

17) Do you clean milking utensils before milking? _ Yes (1) _ No (0)

18) Average milk per day in the high season… kg or liter, from …… (Number of milking) cows.

19) Average milk per day in the low season...kg or liter, from ……. (Number of milking) cows.

20) Do you mix evening and morning milk before you send it to the dairy cooperatives every morning? _ Yes (1) _ No (0)

21) Do you plan to increase the amount of milk you produce? _ Yes (1) _ No (0)

22) If yes, how do you plan to increase your milk production? (Choose up to 3) Increase the number of dairy cows (1) Improve the grade of animals (2) _ Produce more feed (3) _ Buy more feed (4) Spend more on controlling animal Disease (5) _ Depends on extension advice (6) Change farm management practices (e.g. feed) (7) _ don't know (8) _ other (9) (please explain)……

23) What type of feeding system do you use in your dairy farm? 1) Stall 2) stall + grazing 3) other--

24) Do you think there are significant constraints to the dairy production of the farm? _ Yes (1) _ No (0)

25) If answered yes, which are the main constraints you are facing with your dairy farm (choose 3 and rank from 1 to 3 in the order of importance, with 1 being the most important)? _ Lack of fodder or roughage (1), ranking……. _ Low quality of fodder or roughage (2), ranking…… _ Low quality of concentrate feed (3), ranking…… _ High cost of concentrate feed (4), ranking…… _ Lack of credit to buy new animals (5), ranking…… _ Lack of farm laborer/s (6), ranking…… _ Low quality of milk (7), ranking…… _ Low milk yield (8), ranking…… _ Low market price of milk (9), ranking…… _ High price of cattle feed (concentrate feed) (10), ranking……_ Infertility (11), ranking…… _ Animal disease (12), ranking…… _ Good quality semen and genetics (13), ranking……_ other (14), please specify,

25a)……, ranking…25b) ……,ranking……

25c) ……..., ranking…25d) ……..., ranking…...

3: Dairy Marketing Chain and Market Access

3-A. Marketing

26. The purpose of the Dairy farm: 1. to produce dairy products for home consumption only 2. To produce dairy products for market only 3. To produce dairy products for market and home consumption

27. What is the total milk production on your farm per day? ……Liters/day

28. What is the average milk production per cattle per day...? Liters/day

29. To whom do you sell the milk (multiple options possible)? 1. to individual consumers 2. To processing plant 3. To intermediate cater 4. To restaurants/cafeteria 5. Other please specify…….. 30) Selling price in the, per kg or liter……

31) Selling price locally, per kg …

32) How far do you live from the market? ……, or……hours walking

33) What mode of transport do you normally use to get to the market? _ Go by foot (1) _ Bicycle (2) _ Ox-cart (3) _ Own vehicle (4) _ Hired vehicle (5) _ other (6), please specify.....

34) What are the costs incurred during production and marketing of your milk over the last 12 months?

Cost of Production

1/ Processing costs 2/ Costs for using extension and veterinary services 3/ Transport costs 4/ Storage cost 5/ Market costs (fees) 6/ Electricity costs (lighting, storage, processing) 7/ Other costs, please specify……

35) Do you ever have difficulties selling your milk? _ Yes (1) _ No (0)

36) If yes, what are the difficulties?_ Poor quality of milk/sour milk (1) _ No market (2) _ Low price (3) _Lack of transportation (4) Other(5),please specify.....…

37) Do you ever have a delay in getting paid for milk sold? _ Yes (1) _ No (0)

38) If you do have delays, how many days on average per month? Days ….?

39) What do you do to increase the quality of milk you sell...?

40) What type of dairy marketing system do you use in selling your product 1) formal 2) informal?

41) After sold your product what do you do perform by your money...

THANK YOU VERY MUCH FOR YOUR TIME AND ANSWERS

Annex-II Declaration sheet

8. DECLARATION

We, the under signed, declare that the information presented here in our senior research project is our original work, has not been presented for degree in any other university and that all sources of materials used for research and report have been duly acknowledged

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Signature:

Name: Hayder Mussema

Date of submission: 15/5/2015

This these has been submitted for examination with my approval university

Advisor:

Name:Aschalew Assefa

Signature: